LISTING OF CLAIMS

This listing of claims replaces all prior versions and listings of claims in the instant application:

1. (currently amended) A cleaning tool assembly adapted to removably mount a disposable cleaning implement thereto, said cleaning implement having a liquid soluble or liquid dispersible, ~~relatively~~ rigid engaging surface, said tool assembly comprising:

an elongated shaft having a handle portion on one end thereof;

a gripping mechanism mounted to the elongated shaft, and including a contact region moveable between a gripping condition, wherein said contact region cooperates with said engaging surface of the cleaning implement to releasably mount the cleaning implement to the elongated shaft, and a release condition, wherein said cleaning implement is released from said gripping mechanism; and

an elastic boot composed of a substantially liquid impervious material and configured to extend substantially over said contact region of the gripping mechanism such that when said gripping mechanism is in the gripping condition, said contact region urges said elastic boot against said engaging surface of said cleaning implement to form a substantially liquid-tight seal therebetween to substantially delay solubility or dispersion of said engaging surface during liquid immersion and use of the cleaning implement.

2. (original) The cleaning tool assembly according to claim 1, wherein

said gripping mechanism includes an expandable collet device providing said contact region, and adapted for expansion from the release condition to the gripping condition wherein said contact region of the collet device contacts a backside surface of the elastic boot to urge a topside surface thereof into gripping contact with the engaging surface of the cleaning implement from gripping thereof.

3. (original) The cleaning tool assembly according to claim 2, wherein

said contact region of said collet device is generally elliptical-shaped to substantially conform with the elliptical-shape of the opening and engaging surface defining a gripping cavity of the cleaning implement such that upon radial expansion of

the collet device in said gripping cavity to the gripping condition, said boot being expanded radially outward into gripping contact with the engaging surface for gripping and formation of said liquid tight seal therewith.

4. (original) The cleaning tool assembly according to claim 3, wherein

said collet device of said gripping mechanism is adapted to radially contact the boot backside surface, in said gripping condition, in a manner exerting substantially uniform pressure radially outward on said engaging surface.

5. (original) The cleaning tool assembly according to claim 3, wherein

said collet device of said gripping mechanism includes a plurality of finger members extending distally from said elongated shaft, and positioned generally radially around a longitudinal axis of the collet device, the outer contact region of each said finger member collectively having a transverse cross-sectional dimension substantially conforming to elliptical shape of the cavity opening, when in the release condition, said finger members being formed and dimensioned to collectively, slideably insert into the gripping cavity of the cleaning implement when said gripping mechanism is situated in the release condition.

6. (original) The cleaning tool assembly according to claim 5, wherein

said gripping mechanism further includes a plunger mechanism having a plunger head disposed for relative reciprocating movement along the longitudinal axis of the collet device between a disengaged condition and an engaged condition wherein a cam surface of the plunger head contacts an opposed underside displacement surface of the finger member causing the respective contacting regions thereof to move radially outward from the release condition toward the gripping condition.

7. (original) The cleaning tool assembly according to claim 6, further including:

a force limiting device cooperating with said plunger mechanism to limit the force applied by the plunger head to said finger members and the cleaning implement engaging surface.

8. (original) The cleaning tool assembly according to claim 7, wherein

said plunger mechanism is adapted for movement relative said shaft along the collet longitudinal axis between an extended condition, extending the plunger head away from said shaft, and a retracted condition, and said force limiting device includes a plunger biasing device biasing said plunger mechanism toward the extended condition.

9. (original) The cleaning tool assembly according to claim 1, further including:

a force limiting device cooperating with the gripping mechanism to limit the engaging force applied to the engaging surface of the cleaning implement by the collet contact region.

10. (currently amended) A gripping tool adapted to removably secure a disposable, liquid soluble or liquid dispersible cleaning head thereto, said cleaning head including a support surface defining an elliptical-shaped opening into a gripping cavity thereof, said gripping cavity further being defined by a back wall and a ~~relatively~~ rigid side engaging surface extending between the support surface and the back wall, said gripping tool comprising:

an elongated shaft having a handle portion on one end thereof;

a ~~relatively~~ thin, elastic boot composed of a substantially liquid impervious material and having a nipple portion sized and dimensioned for sliding receipt through said opening and into the gripping cavity of said cleaning head, said boot further including a peripheral collar portion extending radially outward from a base of the nipple portion and beyond the cavity opening when said nipple portion is placed in said gripping cavity; and

a gripping mechanism mounted to the elongated shaft, and including a distally extending collet device and shoulder portion positioned at the base of the collet device, said collet device and said shoulder portion being sized and dimensioned for positioning into nipple portion and collar portion, respectively, of the boot until said shoulder portion is positioned proximal to an underside surface of the boot collar portion, said collet device being selectively movable between a release condition, enabling insertion of the

device being selectively movable between a release condition, enabling insertion of the boot nipple portion into the head gripping cavity until the boot collar portion extends over the cavity opening and seats against the head support surface, and a gripping condition, wherein a peripheral contact region of the collet device is positioned radially outward from a longitudinal axis thereof causing the boot nipple portion to contact the opposed cavity engaging surface to releasably mount the cleaning head to the elongated shaft and form a substantially liquid-tight seal therebetween to substantially delay solubility or dispersion of said engaging surface during liquid immersion and use of the cleaning head.

11. (original) The gripping tool according to claim 10, wherein

said collet device of said gripping mechanism is adapted to radially contact a backside surface of the boot, in said gripping condition, in a manner exerting substantially uniform pressure radially outward on the head engaging surface.

12. (original) The gripping tool according to claim 11, wherein

said collet device of said gripping mechanism includes a plurality of finger members extending distally from said shaft, and positioned generally radially around the longitudinal axis of the collet device, the outer contact region of each said finger member collectively having a transverse cross-sectional dimension substantially conforming to the elliptical shape of the cavity opening, when in the release condition.

13. (original) The gripping tool according to claim 12, wherein

said gripping mechanism further includes a plunger mechanism having a plunger head disposed for relative reciprocating movement along the longitudinal axis of the collet device between a disengaged condition and an engaged condition wherein a cam surface of the plunger head contacts an opposed underside displacement surface of the finger member causing the respective contacting regions thereof to move radially outward from the release condition toward the gripping condition.

14. (original) The gripping tool according to claim 13, wherein

said collet device further includes a base portion, and

each finger member is cantilever mounted to the base portion at a respective proximal location thereof for radial cantilever movement between the release condition and the gripping condition as the plunger head is axially displaced between the disengaged condition and the engaged condition.

15. (original) The gripping tool according to claim 14, wherein

each said finger member cooperates with the cam surface of the plunger head to displace the respective contact region of the finger member increasingly radially outward during relative movement as the plunger head is displaced axially along the longitudinal axis of the collet device toward the engaged condition.

16. (original) The gripping tool according to claim 15, wherein

the respective height of each finger member increases in thickness dimension from the proximal end to the distal end thereof to cause increasing gripping pressure between the collet device and the cleaning head as the plunger mechanism moves from the disengaged condition to the engaged condition.

17. (original) The gripping tool according to claim 16, wherein

said gripping mechanism includes a biasing device to bias the gripping mechanism toward the release condition.

18. (original) The gripping tool according to claim 17, wherein

said biasing device includes a compression spring.

19. (original) The gripping tool according to claim 17, wherein

said collet device is slideably mounted to said elongated shaft of the gripping tool, and the biasing device to urge the collet device toward the released condition.

20. (original) The gripping tool according to claim 17, further including:

a latch mechanism cooperating with the plunger mechanism and collet device to lock the gripping mechanism in the gripping condition.

21. (original) The gripping tool according to claim 20, further including:

a release mechanism cooperating with the latch mechanism and the biasing device to release the gripping mechanism from the gripping condition.

22. (original) The gripping tool according to claim 19, further including:

a force limiting device cooperating with said plunger mechanism to limit the force applied by the plunger head to said finger members and the head engaging surface.

23. (original) The gripping tool according to claim 22, wherein

said plunger mechanism is adapted for movement relative said shaft along the collet longitudinal axis between an extended condition, extending the plunger head away from said shaft, and a retracted condition, and said force limiting device includes a plunger biasing device biasing said plunger mechanism toward the extended condition.

24. (original) The gripping tool according to claim 23, wherein

said plunger mechanism is slideably mounted to a bracket of the shaft for axial movement between the retracted condition and the extended condition, and said plunger biasing device includes a compression spring positioned between the plunger mechanism and the bracket to bias the plunger head toward the extended condition.

25. (currently amended) A maneuvering tool adapted to removably secure a disposable, liquid soluble or liquid dispersible cleaning head thereto, said cleaning head including a support surface defining an elliptical-shaped opening into a gripping cavity thereof, said gripping cavity further being defined by a back wall and a ~~relatively~~ rigid, inwardly facing, side engaging surface extending between the support surface and the back wall, said maneuvering tool comprising:

an elongated shaft having a handle portion on one end thereof; and

an internal gripping mechanism mounted to the elongated shaft, and including a collet device having an expansive, circumferential, outward facing contact region sized and dimensioned for sliding insertion through the elliptical-shaped opening and into the

gripping cavity when oriented in a release condition, said gripping mechanism selectively movable between the release condition and a gripping condition wherein the outward facing contact region is displaced radially outward from a longitudinal axis of the collet device and into gripping cooperation with the inwardly facing, side engaging surface to provide a substantially uniform engaging force therebetween for mounting of the cleaning head during operation.

26. (original) The maneuvering tool according to claim 25, further including:

a force limiting device cooperating with the gripping mechanism to limit the uniform engaging force applied to the side engaging surface of the cleaning head by the collet contact region.

27. (original) The maneuvering tool according to claim 26, further including:

an elastic boot composed of a substantially liquid impervious material and configured to extend substantially over said contact region of the gripping mechanism such that when said gripping mechanism is in the gripping condition, said contact region urges said elastic boot against said engaging surface of said cleaning implement to form a substantially liquid-tight seal therebetween to substantially delay solubility of said engaging surface during liquid immersion and use of the cleaning head.

28. (original) The maneuvering tool according to claim 25, wherein

said collet device includes an inflatable bladder adapted to expand the contact region into cooperative engagement with the engaging surface when oriented in the gripping condition.

29. (original) The maneuvering tool according to claim 25, wherein

said collet device of said gripping mechanism includes a plurality of finger members extending distally from said elongated shaft, and positioned generally radially around the collet longitudinal axis, the outer contact region of each said finger member collectively having a transverse cross-sectional dimension substantially conforming to the elliptical shape of the cavity opening, when in the release condition.

30. (original) The maneuvering tool according to claim 29, wherein

said gripping mechanism further includes a plunger mechanism having a plunger head disposed for relative reciprocating movement along the longitudinal axis of the collet device between a disengaged condition and an engaged condition wherein a cam surface of the plunger head contacts an opposed underside displacement surface of each finger member causing the respective contacting regions thereof to move radially outward from the release condition toward the gripping condition.

31. (original) The maneuvering tool according to claim 30, wherein

said collet device further includes a base portion, and

each finger member is cantilever mounted to the base portion at a respective proximal location thereof for radial cantilever movement between the release condition and the gripping condition as the plunger head is axially displaced between the disengaged condition and the engaged condition.

32. (original) The maneuvering tool according to claim 31, wherein

each said finger member cooperates with the cam surface of the plunger head to displace the respective contact region of the finger member increasingly radially outward during relative movement as the plunger head is displaced axially along the longitudinal axis of the collet device toward the engaged condition.

33. (original) The maneuvering tool according to claim 32, wherein

the respective height of each finger member increases in thickness dimension from the proximal end to the distal end thereof to cause increasing gripping pressure between the collet device and the cleaning head as the plunger mechanism moves from the disengaged condition to the engaged condition.

34. (original) The maneuvering tool according to claim 33, wherein

said gripping mechanism includes a biasing device to bias the gripping mechanism toward the release condition.

35. (original) The maneuvering tool according to claim 33, wherein

said collet device is slideably mounted to said elongated shaft of the maneuvering tool, and the biasing device to urge the collet device toward the released condition.

36. (original) The maneuvering tool according to claim 35, further including:

a force limiting device cooperating with said plunger mechanism to limit the force applied by the plunger head to said finger members and the head engaging surface.

37. (original) The maneuvering tool according to claim 36, wherein

said plunger mechanism is adapted for movement relative said shaft along the collet longitudinal axis between an extended condition, extending the plunger head away from said shaft, and a retracted condition, and said force limiting device includes a plunger biasing device biasing said plunger mechanism toward the extended condition.

38. (currently amended) A cleaning tool assembly comprising:

a disposable cleaning implement having a ~~relatively~~ rigid engaging surface;

an elongated shaft having a handle portion on one end thereof;

a gripping mechanism mounted to the elongated shaft, and including a contact region moveable between a gripping condition, wherein said contact region cooperates with said engaging surface of the cleaning implement to releasably mount the cleaning implement to the elongated shaft, and a release condition, wherein said cleaning implement is released from said gripping mechanism; and

an elastic boot composed of a substantially liquid impervious material and configured to extend substantially over said contact region of the gripping mechanism such that when said gripping mechanism is in the gripping condition, said contact region urges said elastic boot against said engaging surface of said cleaning implement to form a substantially liquid-tight seal therebetween to substantially delay liquid contact with said engaging surface during liquid immersion and use of the cleaning implement.

39. (original) The cleaning tool assembly according to claim 38, wherein said cleaning implement is at least partially liquid soluble or liquid dispersible.

40. (original) The cleaning tool assembly according to claim 39, wherein said engaging surface of the cleaning implement defining a gripping cavity having an elliptical-shaped opening therein.

41. (original) The cleaning tool assembly according to claim 40, wherein said collet device of said gripping mechanism is adapted to radially contact a backside surface of the boot, in said gripping condition, in a manner exerting substantially uniform pressure radially outward on the head engaging surface.

42. (original) The cleaning tool assembly according to claim 41, wherein said collet device of said gripping mechanism includes a plurality of finger members extending distally from said shaft, and positioned generally radially around the longitudinal axis of the collet device, the outer contact region of each said finger member collectively having a transverse cross-sectional dimension substantially conforming to the elliptical shape of the cavity opening, when in the release condition.

43. (original) The cleaning tool assembly according to claim 42, wherein said gripping mechanism further includes a plunger mechanism having a plunger head disposed for relative reciprocating movement along the longitudinal axis of the collet device between a disengaged condition and an engaged condition wherein a cam surface of the plunger head contacts an opposed underside displacement surface of the finger member causing the respective contacting regions thereof to move radially outward from the release condition toward the gripping condition.

44. (original) The cleaning tool assembly according to claim 43, wherein said collet device further includes a base portion, and each finger member is cantilever mounted to the base portion at a respective proximal location thereof for radial cantilever movement between the release condition

and the gripping condition as the plunger head is axially displaced between the disengaged condition and the engaged condition.

45. (original) The cleaning tool assembly according to claim 44, wherein

each said finger member cooperates with the cam surface of the plunger head to displace the respective contact region of the finger member increasingly radially outward during relative movement as the plunger head is displaced axially along the longitudinal axis of the collet device toward the engaged condition.

46. (original) The cleaning tool assembly according to claim 45, wherein

the respective height of each finger member increases in thickness dimension from the proximal end to the distal end thereof to cause increasing gripping pressure between the collet device and the cleaning head as the plunger mechanism moves from the disengaged condition to the engaged condition.

47. (original) The cleaning tool assembly according to claim 39, wherein

said gripping mechanism includes a biasing device to bias the gripping mechanism toward the release condition.

48. (original) The cleaning tool assembly according to claim 47, wherein

said biasing device includes a compression spring.

49. (original) The cleaning tool assembly according to claim 47, wherein

said collet device is slideably mounted to said elongated shaft of the cleaning tool, and the biasing device to urge the collet device toward the released condition.

50. (original) The cleaning tool assembly according to claim 42, further including:

a latch mechanism cooperating with the plunger mechanism and collet device to lock the gripping mechanism in the gripping condition.

51. (original) The cleaning tool assembly according to claim 13, further including:

a release mechanism cooperating with the latch mechanism and the biasing device to release the gripping mechanism from the gripping condition.

52. (original) The cleaning tool assembly according to claim 42, further including:

a force limiting device cooperating with said plunger mechanism to limit the force applied by the plunger head to said finger members and the head engaging surface.

53. (original) The cleaning tool assembly according to claim 52, wherein

said plunger mechanism is adapted for movement relative said shaft along the collet longitudinal axis between an extended condition, extending the plunger head away from said shaft, and a retracted condition, and said force limiting device includes a plunger biasing device biasing said plunger mechanism toward the extended condition.

54. (original) The cleaning tool assembly according to claim 53, wherein

said plunger mechanism is slideably mounted to a bracket of the shaft for axial movement between the retracted condition and the extended condition, and said plunger biasing device includes a compression spring positioned between the plunger mechanism and the bracket to bias the plunger head toward the extended condition.

55. (currently amended) A cleaning device comprising:

a disposable, cleaning head including a support surface defining an elliptical-shaped opening into a gripping cavity thereof, said gripping cavity further being defined by a back wall and a ~~relatively~~ rigid, inwardly facing, side engaging surface extending between the support surface and the back wall;

an elongated shaft having a handle portion on one end thereof; and

an internal gripping mechanism mounted to the elongated shaft, and including a collet device having an expansive, circumferential, outward facing contact region sized and dimensioned for sliding insertion through the elliptical-shaped opening and into the gripping cavity when oriented in a release condition, said gripping mechanism selectively movable between the release condition and a gripping condition wherein the outward

facing contact region is displaced radially outward from a longitudinal axis of the collet device and into gripping cooperation with the inwardly facing, side engaging surface to provide a substantially uniform engaging force therebetween for mounting of the cleaning head during operation.

56. (original) The cleaning device according to claim 55, wherein
said cleaning head is at least partially liquid soluble or liquid dispersible.

57. (original) The cleaning device according to claim 56, wherein
said engaging surface of the cleaning head defining a gripping cavity having an elliptical-shaped opening therein.

58. (original) The cleaning device according to claim 56, further including:
a force limiting device cooperating with the gripping mechanism to limit the uniform engaging force applied to the side engaging surface of the cleaning head by the collet contact region.

59. (original) The cleaning device according to claim 58, further including:
an elastic boot composed of a substantially liquid impervious material and configured to extend substantially over said contact region of the gripping mechanism such that when said gripping mechanism is in the gripping condition, said contact region urges said elastic boot against said engaging surface of said cleaning head to form a substantially liquid-tight seal therebetween to substantially delay solubility of said engaging surface during liquid immersion and use of the cleaning head.

60. (currently amended) The cleaning device according to claim ~~5559~~, wherein
said collet device of said gripping mechanism is adapted to radially contact a backside surface of the boot, in said gripping condition, in a manner exerting substantially uniform pressure radially outward on the head engaging surface.

61. (original) The cleaning device according to claim 60, wherein

said collet device of said gripping mechanism includes a plurality of finger members extending distally from said shaft, and positioned generally radially around the longitudinal axis of the collet device, the outer contact region of each said finger member collectively having a transverse cross-sectional dimension substantially conforming to the elliptical shape of the cavity opening, when in the release condition.

62. (original) The cleaning device according to claim 61, wherein

said gripping mechanism further includes a plunger mechanism having a plunger head disposed for relative reciprocating movement along the longitudinal axis of the collet device between a disengaged condition and an engaged condition wherein a cam surface of the plunger head contacts an opposed underside displacement surface of the finger member causing the respective contacting regions thereof to move radially outward from the release condition toward the gripping condition.

63. (original) The cleaning device according to claim 62, wherein

said collet device further includes a base portion, and

each finger member is cantilever mounted to the base portion at a respective proximal location thereof for radial cantilever movement between the release condition and the gripping condition as the plunger head is axially displaced between the disengaged condition and the engaged condition.

64. (original) The cleaning device according to claim 63, wherein

each said finger member cooperates with the cam surface of the plunger head to displace the respective contact region of the finger member increasingly radially outward during relative movement as the plunger head is displaced axially along the longitudinal axis of the collet device toward the engaged condition.

65. (original) The cleaning device according to claim 64, wherein

the respective height of each finger member increases in thickness dimension from the proximal end to the distal end thereof to cause increasing gripping pressure

between the collet device and the cleaning head as the plunger mechanism moves from the disengaged condition to the engaged condition.

66. (original) The cleaning device according to claim 62, further including:

a latch mechanism cooperating with the plunger mechanism and collet device to lock the gripping mechanism in the gripping condition.

67. (original) The cleaning device according to claim 66, further including:

a release mechanism cooperating with the latch mechanism and the biasing device to release the gripping mechanism from the gripping condition.